AMENDMENT TO THE DRAWINGS

Please replace FIGS. 2 and 3 with the enclosed "Replacement Sheets".

REMARKS

This Amendment is response to the Office Action dated May 23, 2005 in which claims 1-20 were initially rejected and the drawings were objected to due to minor informalities. With this Amendment, Applicants respectfully request reconsideration and allowance of all pending claims in view of the above-amendments and the following remarks.

I. DRAWINGS

The drawings were objected to because the lead lines for element 108 in FIG. 2 and elements 208, 218 and 220 in FIG. 3 did not fully contact the appropriate element in the flow chart. In addition, the lead line for element 204 in FIG. 3 crossed the outline of the box. Accordingly, the lead line termination points have been improved in the enclosed "Replacement Sheets". Applicants therefore respectfully request that the objection to the drawings be withdrawn in view of the replacement sheets.

II. CLAIM REJECTIONS UNDER 102(e)

Claims 1-3, 5-6, 11-13, 15 and 16 were rejected under §102(e) as being anticipated by Andreev et al., U.S. Publication No. 2005/0091625.

A. **Inflating a Megacell**

Independent claim 1 includes the step of "inflating a size of at least some of the megacells." Independent claim 11 includes a similar limitation.

The Office Action suggests Andreev et al. disclose this step on page 1, paragraph [0012], lines 3-7 and paragraph [0016], lines 1-4. Other sections of the Office Action refer to FIG. 4, step 70 and claim 12, lines 5-7.

Each of these sections has been reviewed carefully. None of these sections disclose inflating a size of at least some of the megacells. Rather, these cited sections are directed to unrelated concepts.

Page 1, paragraph [0012] is simply a brief description of a drawing. If the Office Action intended to refer to paragraph [0008], lines 3-7, this paragraph relates to the division of a rectangle into first and second rectangles having equal free areas. As stated in paragraph [0015], "the area of the chip that is not covered by any blockage or a fixed cell is referred to as a free area, and is available for cell placement." Paragraph [0006] states that objects are placed in a rectangle and that coordinates of the objects are evaluated and are adjusted to establish a substantially uniform density of objects in the rectangle. Thus, the division of the rectangle into first and second rectangles having equal areas referred to in paragraph [0008] has nothing to do with inflating the size of a megacell, which could be placed in one of the rectangles.

Paragraph [0016], lines 1-4, simply refer to the flowchart shown in FIG. 1. FIG. 1 refers to the placement of megacells and clusters (step 14), making of uniform free area density (step 24), and re-positioning of megacells (step 30). The flow chart does not disclose a step of inflating a size of at least some of the megacells, as recited in claim 1 of the present application.

Similarly, in FIG. 4, step 70 relates to the definition of the rectangle, not inflation of a megacell, which could be placed along with other cells within the rectangle.

Paragraph 0029 describes that, after re-calculation of cell coordinates, the cells may become distributed non-uniformly across the chip. This means that some fragments of the chip may be empty, having no cells, whereas other fragments may be densely packed. The process of FIG. 4 executes movement of the cells and clusters, but does not change the relative position of the cells and clusters. No mention is made of inflating the size of a megacell.

Paragraph [0030] explains that the process of FIG. 4 is a binary recursive algorithm used to achieve uniform density, where R is some rectangular fragment of the chip. R is not a megacell or object, but rather is an area in which objects can be placed and therefore has a placement density.

Paragraph 0031 describes that, at step 70 a rectangular R is defined. At step 72, if the free area of the rectangle is less than some minimum, the process ends at step 74 and if not, the process continues to step 76 where the rectangle R is divided. Step 70 therefore has nothing to do with inflating a size of a megacell as recited in claim 1 of the present application.

B. **Permuting to Reduce Placement Complexity**

The Office Action suggests Andreev et al. disclose permuting megacell placement to reduce placement complexity, as recited in independent claim 1. A similar limitation appears in independent claim 11.

The Office Action directs Applicants' attention to FIG. 1, step 30 and page 3, paragraph [0044], lines 1-4. With respect to claim 11, the Office Action directs Applicants attention also to claim 13, lines 8-10 of Andreev et al.

Regarding step 30, paragraph [0041] states that, the megacells are placed in the coordinates that were evaluated at step 28. Evaluation of new coordinates is described with respect to FIG. 3 and paragraphs [0022]-[0026], for example. As described in paragraph [0022], at step 30 the pins of the megacells and the standard cell clusters that are connected to each wire are evaluated, and new coordinates are assigned to the wire. At step 62, the cells/cluster coordinates are evaluated based on the wire coordinates. Paragraph [0026] describes that movement of the cell/cluster takes into account delay values such that the greater the delay value of the path that contains the wire, the closer the new coordinates of the cell/cluster are to

the coordinates of the wire. Thus, cell coordinates are evaluated and recalculated in order to minimize delay of certain critical paths and to obtain uniform distribution of the cells. Andreev et al. do not disclose permuting megacell placement to reduce placement complexity.

Similarly, claim 13 of Andreev et al. has nothing to do with permuting megacell placements to reduce placement complexity. This is clearly due to its dependence from claim 12, in which the coordinates of objects are adjusted to establish a "substantially uniform density".

Andreev et al. therefore do not anticipate the inventions recited in independent claims 1 and 11 or their corresponding dependent claims. Accordingly, Applicants respectfully request that the rejection of claims 1-3, 5-6, 11-13, 15 and 16 under §102(e) based on Andreev et al. be withdrawn.

III. CLAIM REJECTION UNDER §103(a)

Claims 1-20 were rejected under §103(a) as being unpatentable over Hossain et al., U.S. Patent No. 6,014,506 and further in view of Applicants' alleged Admitted Prior Art. Applicants' alleged Admitted Prior Art is apparently applied only for its use of the term "megacell." The Office Action otherwise suggests Hossain et al. disclose all elements of claims 1-20.

A. **Inflating a Megacell**

As mentioned above, claim 1 includes the step of "inflating a size of at least some of the megacells." Claim 11 includes a similar limitation. The Office Action directs Applicants' attention to Hossain et al., column 6, lines 32-37, column 6, lines 60-67 and claim 1, step 2. However, these sections have nothing to do with inflating the size of a megacell.

Column 6, lines 32-37 provide a definition for a "target window" of an unplaced cell. The target window is defined as a region on the layout area such that placing the cell

in any location inside this region will result in a minimum net length of all the nets for that cell. There is nothing in column 6, lines 32-37 that relate to "inflating a size of at least some of the megacells," as recited in claim one of the present application.

Column 6, lines 60-67 relate to a timing constraint that is the maximum allowed delay on a critical path. Cells are placed in such a way that the delay constraints are met. The edges on a path belong to different nets and, to met the timing constraints, the cells on those nets are to be placed close to each other. During placement, this is achieved by assigning variable weights to nets on a critical path. The term "edges on a path" as defined in column 6, lines 57-59, and "edge of a net" is the connection between any two pins of that net.

Thus, column 6, lines 60-67 relate to placement according to nets on a critical path and have nothing to do with inflation of a size of a megacell.

Claim 1, step 2 of Hossain describes "determining a target window within said layout area for the placement of said picked cell." As discussed above, there is nothing in step 2 that would teach or suggest inflation of the size of at least some of the megacells, as recited in claim 1 of the present application.

B. **Permuting Megacell Placement to Reduce Placement Complexity**

With respect to this step of claim 1 and a similar limitation in claim 11, the Office Action directs Applicants' attention to claim 1, steps 3-6. However, these steps suggest modifying placement to improve timing. There is nothing to teach or suggest permuting megacell placements to reduce placement complexity.

Accordingly, neither Hossain et al. nor Applicants' alleged Admitted Prior Art teach or suggest either separately or

in combination all of the elements of independent claims 1 and 11. In addition, numerous dependent claims have elements that are neither taught nor suggested by the cited references. Applicants therefore respectfully request that the claim rejection under §103(a) be withdrawn.

The Director is authorized to charge any fee deficiency required by this paper or credit any overpayment to Deposit Account No. 23-1123.

Respectfully submitted,

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